

U.S. Patent Application Serial No. **10/589,961**
Response filed on January 13, 2010
Reply to OA dated August 13, 2009

REMARKS

Brief Summary of Interview

Applicants thank the Examiner for holding a telephone interview with applicants's attorney on December 7, 2009. During the interview, the Examiner and the attorney discussed the anticipation rejection of claim 1 based on Choi. In particular, applicants' attorney pointed out that the recitation of claim 1 regarding the amount of reducing substance liberated or eluted from the separator is not a process by which the claimed separator is produced. Rather, this is a performance characteristic of the claimed separator. The Examiner appeared to agree on this point, and agreed to reconsider this application in light of the discussion. Also, during the interview, the Examiner suggested certain claim amendments which may further clarify the claim language. As stated below, claim 1 has been amended in accordance with the Examiner's suggestions.

Anticipation Rejection

Claims 1 and 2 stand rejected under 35 USC 102(b) as being anticipated by Choi (WO 94/02995).

In particular, on page 3, line 10, to page 4, line 16, of the Action, it is alleged that, while "Choi does *not* disclose wherein the surface active agent is characterized in that the amount of any reducing substance liberated or eluted after 24 hours of electrolysis carried out at about 25°C with a direct current of 1.2 A by using an electrolytic cell composed of the porous membrane, a positive

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electrode, a negative electrode and diluted sulfuric acid is 1.0mL or less per 100 cm² when calculated from the consumption of a (1/100)N potassium permanganate solution per 100 cm² of the porous membrane, more specifically, when the amount of the reducing substance is [sic.] 0.7mL or less per 100 cm²,” as recited in claim 1, such limitation is “construed as product by process claim limitations” and would “not [be] given patentable weight...” As discussed during the interview, the claimed limitation regarding the amount of reducing substance liberated or eluted from the separator is not a product-by-process limitation and should be given patentable weight.

As indicated on page 4, lines 11-15, of this application, the claimed invention concerns a separator for a lead-acid battery that releases only a limited amount of reducing substance (1.0 ml or less per 100 cm² as claimed) when the separator is subjected to certain test conditions, as described, for example, on page 16, line 3, to page 18, line 17, of the specification. This portion of the specification states that, when four test pieces of an embodiment of a separator according to the claimed invention were subjected to the claimed test condition (subjecting four separator test pieces to 24 hours of electrolysis carried out at about 25° C with a direct current of 1.2 A by using an electrolytic cell composed of the porous membrane, a positive electrode, a negative electrode and diluted sulfuric acid), the recited amount of reducing substance were liberated or eluted from the test pieces. Accordingly, this recitation of claim 1 regarding the amount of reducing substance liberated or eluted from the separator describes a physical characteristic of the claimed separator and is not a product-by-process limitation.

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Further, the Examiner alleged on page 4, lines 11-14, of the Action that the claimed characteristics might be inherently present in Choi's separator. Applicants would like to point out that, to establish inherency, the missing element should have been necessarily present in the prior art device (MPEP 2112). The fact that a certain result or characteristic may potentially occur is not sufficient to establish inherency.

As disclosed in the Background Art section of this application, a surface active agent is commonly added to a polyolefin resin separator to improve its wetting property (Spec., p. 2, lls. 9-13). However, the surface active agent sometimes causes a reducing substance to be released into the surrounding electrolyte, potentially affecting the capacity of the battery upon its initial charging, its longevity, etc (Spec., p. 2, l. 13, to p. 3, l. 18). The claimed invention limits the amount of reducing substance liberated to at or below a specific level, ensuring that a predetermined capacity for the battery is obtained upon its initial charging, etc. (Spec., p. 4, lls. 11-15). Choi's separator is completely different from the claimed separator. Choi concerns a two-layer structure separator for maintaining the dimensional stability of the separator. Choi does not state that its separator has the recited physical characteristics, nor is there any suggestion in Choi that would lead a person of ordinary skill in the art to conclude that Choi's separator must necessarily exhibit the claimed physical characteristics. Thus, Choi fails to disclose the claimed separator, either literally or under the doctrine of inherency. Claim 2 has been canceled. New claims 3-8 depend from claim 1. Accordingly, this rejection should be withdrawn.

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Claim Amendments

Applicants again thank the Examiner for pointing out that certain amendments may further clarify the language of claim 1.

During the interview, the Examiner stated that the phrases “mainly” and “as an auxiliary material” of claim 1 may be removed to further clarify the claim language. In addition, the Examiner requested that the second part of claim 1 be rearranged to recite that the separator liberates or elutes “1.0 ml or less per 100 cm² of reducing substance” when subjected to the specified test condition (i.e., the separator pieces are subjected to 24 hours of electrolysis carried out at about 25°C with a direct current of 1.2 A by using an electrolytic cell composed of the porous membrane, a positive electrode, a negative electrode and diluted sulfuric acid). Claim 1 has been amended in accordance with the Examiner’s suggestions.

Further, to clarify the dimension of the separator pieces that are subjected to the test condition, applicants have amended claim 1 to recite that “four test pieces of the separator each having a height of 10 cm and a width of 10 cm” are subjected to the specified test condition. Support for this amendment can be found on page 16, line 3, to page 18, line 17, of the specification.

There are no other outstanding rejections in this application. Accordingly, applicants respectfully request an early action passing this application to issue as a patent.

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If, for any reason, it is felt that this application is not now in condition for allowance, applicants respectfully request the Examiner to contact applicants's undersigned attorney at the telephone number provided below to arrange for an interview.

In the event that this paper is not timely filed, applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees which may be due with respect to this paper, to Deposit Account No. 01-2340.

Respectfully submitted,

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Enclosures: Petition for Extension of Time